

Amendment
Application No. 10/576,192
Attorney Docket No. 062412

AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Amend the paragraph beginning on page 2, line 25 as follows:

In the ~~filed~~ field of a roller bearing, a technology for imparting a preload is well known for improving the rigidity. The roller screws using the rollers as rolling members are proposed as, for example, disclosed in the Patent Publications 1 and 2, but have not been manufactured as products, and a technology for imparting the preload to the roller screw has not been developed.

Amend the paragraph beginning on page 3, line 14 as follows:

In order to solve the above problem, the invention ~~of claim 1~~ is a roller screw comprising: a screw shaft (1) having an outer peripheral surface in which a spiral roller rolling groove (1a) is formed; a nut member (2) having an inner peripheral surface in which a spiral loaded roller rolling groove (2a) is formed so as to oppose to the roller rolling groove (1a) of the screw shaft; a return member (4) connecting one and another ends of a loaded roller rolling groove (2a) of the nut member (2) and configured to circulate a roller rolling the loaded roller rolling passage (3) between the roller rolling groove (1a) of the screw shaft (1) and the loaded roller rolling groove (2a) of the nut member (2); and a plurality of rollers (6) disposed in the loaded roller rolling passage (3) and the return member (4), wherein a spacer (31) is disposed between a pair of adjacent rollers (6, 6) so as to prevent the paired rollers from contacting each other.

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Amend the paragraph beginning on page 4, line 2 as follows:

The invention ~~of claim 2~~ is characterized, in addition to the roller screw ~~of claim 1 above~~, in that the spacer (31) is formed with concave portions (31a, 31a) at both ends in an advancing direction thereof so as to contact an outer peripheral surface of the roller (6), and the roller (6) contacts the concave portions (31a) along an entire length in the axial direction thereof.

Amend the paragraph beginning on page 4, line 8 as follows:

The invention ~~of claim 3~~ is characterized, in addition to the roller screw ~~of claim 2 above~~, in that a pair of axes of the rollers (6, 6) are disposed in a pair of planes (P1, P2) substantially parallel with each other in a state that the paired rollers (6, 6) disposed at both the ends in the advancing direction contact the concave portions (31a, 31a) of the spacer (31).

Amend the paragraph beginning on page 4, line 14 as follows:

The invention ~~of claim 4~~ is characterized, in addition to the roller screw ~~of claim 2 or 3 above~~, in that an intersecting portion of the concave portion (31a) of the spacer (31) and a surrounding surface portion (31c) of the space except the concave portion (31a) is chamfered so as to perform a smooth circulation of the spacer.

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Amend the paragraph beginning on page 4, line 19 as follows:

The invention ~~of claim 5~~ is characterized, in addition to the roller screw ~~of any one of claims 1 to 4 above~~, in that the return member (4) includes a central portion (14) extending linearly and a pair of end portions (15, 15) bent on both sides of the central portion, front end portions (15b) of the end portions (15) are disposed in a tangential direction of the loaded roller rolling passage (3) as viewed from the axial direction of the screw shaft (1) and are inclined in a lead angle direction of the loaded roller rolling passage (3) as viewed from a side of the screw shaft (1).

Amend the paragraph beginning on page 5, line 2 as follows:

The invention ~~of claim 6~~ is characterized, in addition to the roller screw ~~of any one of claims 1 to 5 above~~, in that a loaded roller rolling passage (3) having a square section is formed between the roller rolling groove (1a) of the screw shaft (1) and the loaded roller rolling groove (2a) of the nut member (2), and axes of a pair of adjacent rollers (6, 6) are perpendicular to each other as viewed from a roller advancing direction.

Amend the paragraph beginning on page 5, line 10 as follows:

According to the invention ~~of claim 1~~, since the concave portions of the spacer contact the roller to thereby keep the predetermined attitude of the roller, the roller can smoothly circulate without causing any skew.

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Amend the paragraph beginning on page 5, line 14 as follows:

According to the invention ~~of claim 2~~, the skew of the roller can be surely prevented.

Amend the paragraph beginning on page 5, line 16 as follows:

According to the invention ~~of claim 3~~, the roller can smoothly circulate without causing any skew with respect to either one of spiral track of the loaded roller rolling passage and linear track in the return member. Although details will be described hereinafter, when the concave portions on both ends of the spacer are formed so that the axis of the roller rolling in the spiral loaded roller rolling passage inclines toward the center of the screw shaft in a state viewed from the axial direction of the screw shaft, the roller moves in the linear track, for example, of the return member and does not smoothly circulate therein, which was confirmed through experiment.

Amend the paragraph beginning on page 5, line 26 as follows:

According to the invention ~~of claim 4~~, the engagement of the spacer at the joint portion between the loaded roller rolling passage and the return member can be prevented.

Amend the paragraph beginning on page 6, line 3 as follows:

~~As recited in claim 5, the~~ The present invention can be preferably applicable to a return member provided with a central portion extending linearly and a pair of end portions bent at both sides

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of the central portion. The front end of the end portion is arranged in the tangential direction of the loaded roller rolling passage and the lead angle direction thereof, so that the spacer can be smoothly moved at the joint portion between the loaded roller rolling passage and the return member.

Amend the paragraph beginning on page 6, line 11 as follows:

~~As recited in claim 6, the~~ The present invention can be preferably applicable to a roller in cross-arrangement which easily causes the skew.